

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU2005/000225

## A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. <sup>7</sup>: A61N 1/00, A61M 16/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

SEE ELECTRONIC DATABASES CONSULTED

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI: osa, sleep, breathing, disorder, apnea, hypop, obstruct, airway, cheyne-stokes, electric, electrode, potential, fes, fns, mens, stimulate, nerve, neural, muscle, hypoglossus, genioglossus, pulse.

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4830008 A (MEER) 16 May 1989 Abstract, Fig. 1-6, column 5 line 36 – column 6 line 59.	1-6
X	US 5540733 A (TESTERMAN et al.) 30 July 1996 Abstract, Fig. 33,34, column 2 line 43 – column 3 line 31, column 13 line 11 – column 16 line 22	1-6
X	WO 1992015364 A1 (MEER) 17 September 1992 Abstract, Fig. 1-11, page 15 line 20 – page 16 line 23.	1-6
X	EP 0507580 B1 (MEDTRONIC, INC) 31 July 1996 Fig.1-5, column 2 line 50 – column 3 line 28	1-6

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
5 April 2005

Date of mailing of the international search report  
13 APR 2005

Name and mailing address of the ISA/AU  
AUSTRALIAN PATENT OFFICE  
PO BOX 200, WODEN ACT 2606, AUSTRALIA  
E-mail address: pct@ipaustalia.gov.au  
Facsimile No. (02) 6285 3929

Authorized officer  
**MATTHEW FORWARD**  
Telephone No : (02) 6283 2606

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0702977 B1 (MEDTRONIC, INC) 19 March 2003 Paragraphs [0001], [0004]-[0010], [0024]	1-6
X	WO 1992021407 A1 (MEDTRONIC, INC) 10 December 1992 Abstract, Fig. 1-6, page 5 line 2 – page 6 line 20.	1-6
X	US 6251126 B1 (OTTENHOFF et al.) 26 June 2001 Abstract, Fig. 1-6, column 2 line 35 – column 5 line 63.	1-6
X	US 6240316 A (RICHMOND et al.) 29 May 2001 Abstract, Fig.1-8, column 7 line 52 – column 8 line 43.	1-6

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## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:1-6

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

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### Supplemental Box

(To be used when the space in any of Boxes I to VIII is not sufficient)

#### Continuation of Box No: III

The claims do not relate to one invention only (or to a group of inventions so linked as to form a single general inventive concept). In assessing whether there is more than one invention claimed, I have given consideration to those features which can be considered to be "special technical features". These are features that potentially distinguish the claimed combination of features from the prior art. Where different claims have different special technical features they define different inventions. I have found claims having different special technical features as follows:

- (1) Claims 1-6. It is considered that –electrical stimulation of nerves to increase muscle tone of upper airway muscles - comprises a first special technical feature.
- (2) Claims 7-15. It is considered that – mechanical stimulation of nerves to increase muscle tone of upper airway muscles - comprises a second special technical feature.
- (3) Claims 16-29. It is considered that – measuring a transthoracic impedance changes via implanted electrodes - comprises a third special technical feature.
- (4) Claim 30. It is considered that – combination of implanted electrodes and acoustic transducers - comprises a fourth special technical feature.

Since these groups of claims do not share any of the special technical features identified, a technical relationship between the inventions does not exist. Accordingly the claims do not relate to one invention or to a single inventive concept, a priori.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

**PCT/AU2005/000225**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
US	4830008	NONE			
US	5540733	NONE			
WO	9215364	AU	15302/92	CA	2105075
		US	5190053	EP	0576528
EP	0507580	US	5215082		
EP	0702977	JP	8224318	US	5540732
WO	9221407	AU	18988/92	CA	2084312
		US	5174287	EP	0541763
US	6251126	US	6269269		
US	6240316	US	6345202	US	2001010010
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.					
END OF ANNEX					